

## OPERATIVE TREATMENT OF EPISPADIAS BY TRANSPLANTATION OF THE URETHRA.

By F. V. CANTWELL, M.D.,

OF TRENTON,

SURGEON TO THE ST. FRANCIS HOSPITAL.

**I**N all cases of reparative surgery, in which the defect is congenital, the aim of the surgeon should be to restore the parts to their normal relations as nearly as possible. To effect this, it is necessary first to give a thought to the cause of the deformity.

As to epispadias,—the corpora cavernosa in a normal penis are so intimately attached that it is impossible to separate them without injuring the bodies themselves. They seem even to have decussating fibres. The same bodies in an epispad can readily be torn apart, having no connection save by some loose areolar tissue; they simply run parallel.

This fact is strong proof of Thiersch's theory that the condition is not one of failure of development, but of traumatism to the fetus. Probably a tearing of the urethral roof by dammed-up urine.

The roof being torn, the cavernous bodies are separated, and the floor of the urethra with the remains of the spongy body come up through the gap thus made, really being everted. Then kind nature—who always makes the best of everything—allows the parts to heal in this position and an epispad is formed. The mechanism of the injury strongly brings to mind what occurs when a grain of corn pops on the stove.

Granting the above to be true, the best operation for the condition would be one that would reverse the conditions of the accident,—that is, loosen up the urethra from its unnatural

attachments, separate the cavernous bodies, replace the urethra in its normal position under the penis, and bring the two bodies up over it, thus obtaining an almost normal organ.

This conclusion was reached after careful dissection of a complete epispad, and has been proven to be just by the results following operation in two complete cases.

It would be difficult to understand the technique of the operation without reference to the accompanying diagrams.

It is necessary first to establish a bladder fistula in order to divert the urine from the place to be operated upon. This is best done by pushing out the perineum with a finger in the bladder and cutting down upon it. This plan was first used by Thiersch.

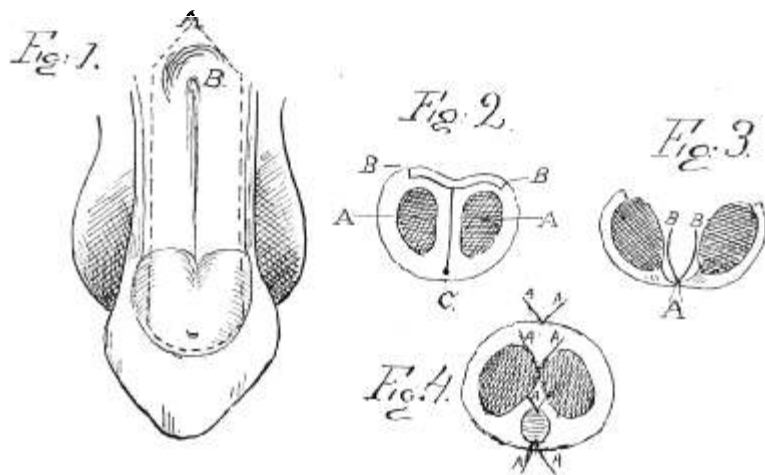
I found the perineal drainage-tube, devised by Francis S. Watson, to be an excellent instrument to use during the course of cure. The tube is pictured and described in the "System of the Genito-Urinary Diseases," etc., edited by Prince A. Morrow. With it I see no advantage in waiting a week or ten days before operating on the penis. Both operations might be done at one sitting or on succeeding days, thus saving a great deal of time.

First look closely and find where the mucous membrane of urethra and the skin of the penis come together, this seems to me to be a marked line of scar tissue. Along these lines on either side of the penis two parallel incisions are made extending from the symphysis out to the extremity of the glans penis. These incisions are to be made down to the cavernous bodies without injuring them and also made to join above the bladder opening as at *A*, in Fig. 1. Then a flap is to be formed of the whole urethra from the glans as deep into the infundibulum as the operator thinks advisable. This flap is *B, B*, in Fig. 2. The urethra is held up out of the way while the cavernous bodies are separated either by light touches of the knife or by blunt dissection; in fact, they can be pushed apart with the end of the finger (see Fig. 2, *C*). A slight incision is necessary in the glans.

The urethral flap is then laid in the gutter thus formed, and held in position by two sutures through mucous membrane and skin tied on under surface of penis (see Fig. 3, *A*).

A silver catheter is then laid in the urethra and a canal is

formed by continuous suture of the free edges of the mucous membrane. Above this the corpora cavernosa are brought together, and retained by a continuous suture. The skin is usually so abundant that it can be brought together above this. Then a few well applied deep sutures are put into the skin and fat of the mons veneris, leaving a penis that looks normal save for a straight line of sutures along the dorsum (see Fig. 4).



#### EXPLANATION OF DIAGRAMS.

FIG. 1.—The dorsum of the penis in a complete epispadias. *A*, The dotted line represents the line of incision for urethral flap. *B*, The infundibulum or opening into the bladder.

FIG. 2.—A transverse section of an epispadias. *A, A*, The corpora cavernosa. *B, B*, A transverse section of flap composed of urethra, and, if necessary, the remains of the corpus spongiosum. *C*, The line of incision between the corpora cavernosa down to the skin on the under surface of penis.

FIG. 3.—A transverse section of an epispadias showing the cavernous bodies separated. The urethral flap (*B, B*) laid in the gutter and a retention suture (*A*) in place.

FIG. 4.—Transverse section of penis after operation showing the sutures (*A, A, A, A*) in place.

There are several questions that present themselves in this operation.

The patient should be at least ten years of age, for at that time the penis has developed so much as to make manipulation

easy and the cavernous bodies are firm; besides, the child will have passed through that dangerous period of infancy in which death so often comes.

I think it is best to dissect the mucous membrane clear of the glans and transplant it instead of making two converging incisions on either side of the urethra, after the manner of Thiersch.

All bleeding is readily controlled by the sutures. The best material for sutures is catgut for the buried ones and silkworm gut externally.

The catheter should be left in until the healing process has well advanced, to prevent contraction and for the purpose of washing out the bladder and to keep the perineal drainage-tube clean.

As to waiting some days after the perineal fistula is made before doing the operation on the penis, the only advantage is that the time allows the ever-present excoriations to heal and gives a dry surface for operation. Otherwise five minutes suffice to make the fistula, and the operation can be completed at one sitting in forty-five minutes. I will relate two cases.

CASE I.—May, 1894: robust boy, aged eleven years; penis showed complete epispadias; arch of pubes present, but slender; parts badly excoriated by continual dribbling of urine: he kept his clothes dry by the use of very large thick pads of cloth.

Perineal fistula made and ten days allowed to elapse. The seat of operation was found dry and skin free from excoriations.

There was free bleeding during operation, but it was readily controlled. The urethral flap was unfortunately button-holed at the glans, this afterwards necessitated the use of bougies on account of the tendency to contract. The rest of the operation went smoothly. There was a great deal of swelling for some days after the operation, but this subsided. In three weeks the whole wound had closed, with the exception of a pin-hole opening at the site of the infundibulum. This persisted for six months, in spite of efforts to close it, when it finally closed.

At present (August, 1895) he has a good penis, which, instead of being drawn up to form a cork for an opening into the bladder, hangs pendulous as a normal penis does. He can get a firm erection, and, although he still dribbles somewhat, he is proud of the strength

of the stream he passes. He retains his water for more than two hours. He wears a urinal and keeps dry, and is able to do some of the work around the farm.

CASE II.—Aged seven years; similar in every way to Case I, except that I had attempted, a year before, to repair his penis by a flap operation, which was a dismal failure, and left the penis worse than before.

This operation was far more difficult than in Case I, on account of the smallness of the penis and the fact that the cavernous bodies



FIG. 5.—Result of operation for epispadias.

were poorly developed. The child had tuberculosis of hip-joint and did poorly from the beginning. In spite of this, and of the fact that the wound suppurated, the incisions healed in a loose manner. Now (August, 1895), although the boy has not got a good penis, he has a canal to the end of it. He has slight control over his urine, and at times can pass a stream. He would be dry and comfortable with a rubber urinal.

A proof that this operation is the typical one for this deformity is the fact that, when completed, we have a penis normal in the relation of its component parts and normal in appearance. That instead of a separate operation being needed to correct the upward curvature manifest in these cases, at the conclusion of the operation the penis is pendulous.